Alexander H. King

CURRICULUM VITAE

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Citizenship:

U.S. (Formerly U.K. - naturalized in 1990).

Employment:

1999-	Professor and Head, School of Materials Engineering, Purdue University.
1981-99	Assistant Professor, Associate Professor (1984), then Professor (1990), Dept. of Materials Science & Engineering, State University of New York at Stony Brook.
1987-92	Associate Vice Provost, Acting Vice Provost (1989), then Vice Provost for Graduate Studies (1990), State University of New York at Stony Brook (concurrent with above faculty appointment).
1979-81	Research Associate, Dept. of Materials Science & Engineering, Massachusetts Institute of Technology.
1979	Postdoctoral Fellow (Harwell EMR Fellow), Dept. of Metallurgy & Science of Materials, University of Oxford, England.

Education:

1975-79	**D.Phil.**, University of Oxford, England, *Metallurgy & Science of Materials.*
1972-75	**B.Met**.(Hons.), University of Sheffield, England, *Physical Metallurgy*.

Honors, Awards and Special Achievements:

1995	Fellow of the American Society for Materials
1995	Fellow of the Institute of Materials of the United Kingdom
1996	Visiting Fellow of the Japan Society for the Promotion of Science
2002	President of MRS
2002	Frontiers of Materials Science Lecture: Lawrence Livermore Nat'l Lab.
2003	Burgess Memorial Lecture: Washington DC Chapter of ASM International.
2005	Distinguished Lecture: Materials Science & Engineering, Pennsylvania State University.
2005-06	State Department / National Academies Jefferson Science Fellow
2006	Chair of the Gordon Conference on Physical Metallurgy
2007	Distinguished Lecture: Materials Science & Engineering, Iowa State University.

Standing Committee and Board Memberships:

1998-03	MRS: Board of Directors
2004-	Lawrence Livermore National Laboratory: Directorate Review Committee for the Division of Chemical, Biological and Materials Science.
2005-	University of Maryland: Board of Visitors for Materials Science & Engineering
2007-	Sandia National Laboratory: External Review Panel for the Materials Science & Technology Research Foundation.
2007-	Lawrence Berkeley National Laboratory: Scientific Review Committee for the National Center for Electron Microscopy

Membership in Professional Societies:

The Metallurgical Society of A.I.M.E.;

American Society for Materials International;

Materials Research Society;

Microscopy Society of America;

American Physical Society;

The Institute of Materials (U.K.);

American Society for Engineering Education;

The American Ceramic Society;

The American Association for the Advancement of Science

Other Professional Qualifications:

Chartered Engineer (U.K. Professional Engineer Status).

Books:

C.S. Pande, A.H. King, D.A. Smith and J. Walter (Eds.) *Interface Migration and Control of Microstructure*, ASM, Metals Park OH, 1986.

A.H. King, K. Tangri, and J. Walter (Eds.) *Structure/Property Relationships for Interfaces*, ASM, Materials Park OH, 1991.

E.P. Kvam, A.H. King, M.J. Mills, T.D. Sands and V. Vitek (Eds.) *Defect-Interface Interactions*, MRS, Pittsburgh, PA, 1994.

R.C. Pond, W.A.T. Clark A.H. King and D.B. Williams (Eds.) *Boundaries & Interfaces in Materials: The David A. Smith Symposium*, TMS, Warrendale, PA, 1998.

Archival Journal Articles:

A.H. King and D.A. Smith, *Metal Science* **13** (1979) 113: "Nucleation of Recrystallization - Model for Strain-Induced Grain Boundary Migration"

A.H. King and D.A. Smith, *Metal Science* **14** (1980) 57: "Stress-Induced Absorption and Emission of Point Defects by Grain Boundaries"

A.H. King and D.A. Smith, *Acta Crystallographica* **A36** (1980) 335-343: "The Effects on Grain Boundary Processes of the Steps in the Boundary Plane Associated with the Cores of Grain Boundary Dislocations"

A.H. King and D.A. Smith, *Phil. Mag.* **A42** (1980) 495: "On the Mechanisms of Point Defect Absorption by Grain and Twin Boundaries"

A.H. King and R.W. Balluffi, *Scripta Met.* **14** (1980) 1157: "Remarks on the Energy-Misorientation Relationship of Grain Boundaries"

A.H. King and D.A. Smith, *Radiation Effects* **54** (1981) 169: "Calculations of Sink Strength and Bias for Point Defect Absorption by Dislocations in Arrays"

D.A. Smith and A.H. King, *Phil. Mag.* **A44** (1981) 333: "On the Mechanism of Diffusion Induced Grain Boundary Migration"

A.H. King, *Scripta Met.* **15** (1981) 1221: "Properties and Effects of Pure Steps on Grain Boundary Planes: Application to Diffusion Induced Grain Boundary Migration".

A.H. King, *Acta Met.* **30** (1982) 419-427: "Step Heights Associated with Grain Boundary Dislocations in Cubic Crystals".

R.W. Balluffi, A. Brokman and A.H. King, *Acta Met.* **30** (1982) 1453: "Overview: CSL/DSC Lattice Model for General Crystal-Crystal Boundaries and their Line Defects"

A.H. King, *Scripta Met.* **16** (1982) 1181: "Further Comments on the Appropriateness of Stacking Fault Energy - to - Mechanical Property Correlations".

A.H. King, *Phys. Stat. Sol. (a)* **76** (1983) 629: "Evidence for the Formation of Twins by Deformation and Growth Accidents in Evaporated Thin Films of Gold".

A.H. King, *Phil. Mag.* **A48** (1983) L39: "Some Problems with the Grain Boundary Dislocation Climb Model for Diffusion Induced Grain Boundary Migration, and Possible Solutions".

Fu-Rong Chen and A.H. King, *Mat. Sci. Eng.* **66** (1984) 227: "Interactions Between Lattice Partial Dislocations and Grain Boundaries"

Fu-Rong Chen and A.H. King, *Mat. Sci. Eng.* **66** (1984) L25: "Partial Dislocation - Grain Boundary Interactions in B.C.C. Crystals"

V.K. Garke and A.H. King, *Scripta Met.* **18** (1984) 1341: "An Unexpected Grain Size Effect in Diffusion Induced Grain Boundary Migration"

L. Giannuzzi and A.H. King, *Scripta Met.* **19** (1985) 291: "Grain Boundary Viscosity at High Temperature and the Grain Boundary Phase Transformation"

A.H. King and J.W. Perram, *Mat. Sci. Eng.* **70** (1985) 211: "Application of Computer Simulation Techniques to Problems in Conventional Plasma Spraying"

A.H. King, *Scripta Met.* **19** (1985) 1517: "On the Kinetics of Dislocation Absorption by grain boundaries".

Fu-Rong Chen and A.H. King, *Mat. Sci. Eng.* **81** (1986) 51: "Energy Minimizing Structures for Interfacial Dislocation Arrays: Non-Planar Configurations in Low Angle Grain Boundaries"

R.J. Jahn and A.H. King, *Phil. Mag.* **A54** (1986) L3: "Vacancy Deposition during Diffusion Induced Grain Boundary Migration"

V.K. Garke and A.H. King, *Mat. Sci. Eng.* **83** (1986) 109: "Effects of Thermomechanical Treatment on the Progress of Diffusion Induced Grain Boundary Migration"

Fu-Sen Chen and A.H. King, *Scripta Met.* **20** (1986) 1401: "The Misorientation Dependence of Diffusion Induced Grain Boundary Migration"

A.H. King, *Scripta Met.* **21** (1987) 541: "On the selectivity of certain experiments on diffusion induced grain boundary migration".

Fu-Sen Chen and A.H. King, *Scripta Met.* **21** (1987) 649: "On the nucleation of diffusion induced recrystallization"

Fu-Rong Chen and A.H. King, *J. Electr. Micr. Technique* **6** (1987) 55: "Determination of the crystallographic directions and planes of features, and misorientations of crystals with high accuracy and internal estimation of errors"

A.H. King and M.H. Yoo, *Scripta Met.* **21** (1987) 1115: "On the availability of dislocation reactions at grain boundaries in cubic ordered alloys"

Fu-Rong Chen and A.H. King, *Acta Cryst.* **B43** (1987) 416: "The further geometry of grain boundaries in hexagonal close packed metals"

A.H. King, *Int. Mats. Revs.* **32** (1987) 173-189: "Diffusion Induced Grain Boundary Migration".

Fu-Rong Chen and A.H. King, *Phil. Mag.* **A57** (1988) 431-455: "High angle grain boundary structures in hexagonal close packed metals"

Fu-Rong Chen and A.H. King, *Met. Trans.* **A19** (1988) 2359: "Structure of a small angle tilt grain boundary in zinc"

M.H. Yoo and A.H. King, *J. Mats. Res.* **3** (1988) 848: "Slip, twinning and fracture at a grain boundary in the $L1_2$ ordered structure - a $\Sigma 9$ tilt boundary"

Fu-Sen Chen and A.H. King, *Acta Met.* **36** (1988) 2827: "Misorientation effects upon diffusion induced grain boundary migration in the copper-zinc system"

Kisoo Shin and A.H. King, *Mat. Sci. Eng.* **A113** (1989) 121: "Dislocation structures in large angle grain boundaries in hexagonal close packed materials"

G.J. Cosgrove and A.H. King, *Mat. Sci. Eng.* **A123** (1990) 39: "Adsorption, surface energy and the driving force for the migration of grain boundaries in substitutional alloys"

A. Singh, N. Chandrasekhar and A.H. King, *Acta Cryst.* **B 46** (1990) 117: "Coincidence orientations of grains in tetragonal or near-tetragonal orthorhombic crystal systems"

Fu-Sen Chen, Girish Dixit and Antonio J. Aldykiewicz, Jr. and A.H. King, *Met. Trans.* **A 21** (1990) 2363: "Bicrystal studies of diffusion induced grain boundary migration in Cu/Zn"

M.H. Yoo and A.H. King, *Met. Trans.* **A 21** (1990) 2431: "Intergranular fracture by slip/grain boundary interaction"

Y.L. Corcoran, N. deLanerolle, B. Kim and A.H. King, *J. Electr. Mater.* **19** (1990) 1177: "Grain Boundary Diffusion and Growth of Titanium Silicide Layers on Silicon"

H. Zhang, A.H. King and R. Thomson, *J. Mater. Res.* **6** (1991) 314: "The interaction between dislocations and intergranular cracks"

Kisoo Shin and A.H. King, *Phil. Mag.* **A 63** (1991) 1023-1033: "Observations of Grain Boundary Structure in Zinc"

A.H. King, H.J. Frost and M.H. Yoo, *Scripta Met.* **25** (1991) 1249 (invited viewpoint article): "Plasticity enhancement through disordering at grain boundaries"

A.H. King, *Met. Trans.* **A 22** (1991) 1177: "The geometry and properties of ledges in interfaces" (invited paper).

A.S. Kirtikar and A.H. King, *Mat. Sci. Eng.* **A148** (1991) 155: "Crack tip - dislocation loop interactions"

Y.L. Corcoran and A.H. King, *Mat. Sci. For.* **94-96** (1992) 577: "Grain growth in titanium disilicide and its effects upon reaction kinetics"

D. Goyal and A.H. King, *J. Mater. Res.* **7** (1992) 359: "TEM observations of the mechanism of delamination of chromium films from silicon substrates"

R.J. Jahn and A.H. King, *Acta Metall.* **40** (1992) 551: "Dissociation of grain boundaries induced by changes of composition, the ejection of dislocations from grain boundaries, and the nucleation of diffusion induced grain boundary migration"

A.H. King and Yimei Zhu, *Phil. Mag.* **A 67** (1993) 1037-1044: "Twin-corner disclinations in $YBa_2Cu_3O_{7-\delta}$"

Abha Singh and A.H. King, *Acta Cryst.* **B 49** (1993) 266: "Tables of Coincidence Orientations for Ordered Tetragonal $L1_0$ Alloys for a Range of Axial Ratios"

Abha Singh and A.H. King, *J. Appl. Phys.* **74** (1993) 4627: "A geometrical rationalization of the special properties of the 14º [001] grain boundary in $YBa_2Cu_3O_{7-\delta}$ "

Abha Singh, Jenn-Yue Wang and A.H. King, *Interface Science* **1** (1993) 347: "Principles of grain boundary geometry in non-cubic materials, with applications to $YBa_2Cu_3O_{7-\delta}$ "

A.H. King, *Scripta Met. & Mat.* **31** (1994) 1493: "Complications of diffusional creep at very small grain sizes."

Karen Harris and A.H. King, *J. Elec. Mater.* **23** (1994) 1035: "TEM detection of microtexture variations and their effects on thin film stability"

A.H. King and Abha Singh, *J. Phys. Chem. Sol.* **55** (1994) 1023: "Generalizing the coincidence site lattice model to non-cubic materials" (invited paper.)

Y. Liu, W. Zhao, X. Zheng, A.H. King, A. Singh, M. Rafailovich, J. Sokolov, K. Dai, E. J. Kramer, S. A. Schwarz, O. Gebizlioglu and S.K. Sinha, *Macromolecules* **27** (1994) 4000-4010: "Surface-induced ordering in asymmetric block copolymers"

A.H. King, *Canadian Metallurgical Quarterly* **34** (1995) 155: "The use and control of grain boundaries in thin films" (invited review article).

Karen Harris and A.H. King, *Philips Electron Optics Reporter* **134**, 9 (1996): "Conical dark field imaging for microstructural analysis of polycrystalline thin films" (invited paper).

Varun Singh and A.H. King, *Scripta Mater.* **34** (1996) 1723: "The incidence of symmetric tilt grain boundaries in polycrystalline thin films of gold"

Liya Liang and A.H. King, *Acta Mater.* **44** (1996) 2983: "Diffusion induced grain boundary migration in the zinc-cadmium system" (Liya Liang and A.H. King).

J. Karthikeyan, C.C. Berndt, J. Tikkanen, J.Y. Wang, A.H. King and H. Herman, *Nanostructured Materials* **8** (1997) 61-74: "Nanomaterial Powders and Deposits Prepared by Flame Processing of Liquid Precursors"

J. Karthikeyan, C.C. Berndt, J. Tikkanen, J.Y. Wang, A.H. King and H. Herman, *Nanostructured Materials* **9** (1997) 137-140: "Preparation of nanophase materials by thermal spray processing of liquid precursors"

V. Singh, G. Dixit and A.H. King, *J. Elec. Mater.* **26** (1997) 987: "Some further microstructural characteristics of polycrystalline face-centered cubic metal thin films"

K.M. Yin, A.H. King, F.R. Chen, J.J. Kai, S. Hsieh and L. Chiang, *Microsc. and Microanalysis* **3** (1997) 417-422: "Segregation of bismuth to triple junctions in copper"

A.H. King F.-R. Chen, L. Chiang and J.J. Kai, *Interface Science* **5** (1997) 287: "Toward understanding polycrystalline aggregate structure: analysis of a twin intersection and the interactions between interfaces in diamond"

J. Kathikeyan, C.C. Berndt, S. Reddy, J.Y. Wang, A.H. King and H. Herman, *J. Amer. Ceramic Soc.* **81** (1998) 121-128: "Nanomaterial deposits formed by DC plasma spraying of liquid feedstocks"

K.E. Harris, V.V. Singh and A.H. King, *Acta Mater.* **46** (1998) 2623-2633: "Grain rotation in thin films of gold"

J.Y. Wang, A.H. King, Y. Zhu, Y.L. Wang and M. Suenaga, *Phil. Mag.* **A 78** (1998) 1037: "On the Correlation of Grain Boundary Misorientation Distribution with Critical Current in Bulk Processed $YBa_2Cu_3O_{7-\delta}$"

K.E. Harris and A.H. King, *Acta Mater.* **46** (1998) 6195: "Direct Observation of Diffusional Creep via TEM in Polycrystalline Thin Films of Gold"

C.K. Yee, R. Jordan, A. Ulman, H. White, A.H. King, M. Rafailovich and J. Sokolov *Langmuir* **15** (1999) 3486-3491: "Novel one-phase synthesis of thiol-functionalized gold, palladium, and iridium nanoparticles using superhydride"

R. Dannenberg, S. Baliga, R.J. Gambino, A.H. King, and A.P. Doctor, *J. Appl. Physics.* **86** (1999) 514-523: "Resistivity, Thermopower and the Correlation to Infrared Active Vibrations of $Mn_{1.56}Co_{0.96}Ni_{0.48}O_4$ Spinel Films Sputtered in an Oxygen Partial Pressure Series"

R.Dannenberg, Alexander H. King, *Interface Science* **7** (1999) 33-44: "Grain Boundary Resistivity and Electrically Induced Grain Boundary Migration in Metallic Bamboo Microstructures"

T. Chraska and A.H. King, *J. Mats. Sci. Letts.* **18** (1999) 1517-1519: "Growth of columnar grains during zirconia-yttria splat solidification"

A.H. King, *Interface Science* **7** (1999) 251-271: "The Geometric and Thermodynamic Properties of Grain Boundary Junctions." (invited paper)

R. Dannenberg, S. Baliga, R.J. Gambino, A.H. King, and A.P. Doctor, *J. Appl. Physics* **86** (1999) 2590-2601: "Infrared Optical Properties of $Mn_{1.56}Co_{0.96}Ni_{0.48}O_4$ Spinel Films Sputter Deposited in an Oxygen Partial Pressure Series"

K. Owusu-Boahen and A.H. King, *Scripta Materialia* **42** (2000) 301-306: "Analysis of the Grain Boundary misorientation distribution in polycrystalline gold thin films using minimal data"

G. Gottstein, A.H. King and L.S. Shvindlerman, *Acta Materialia* **48** (2000) 397-403: "The effect of triple junction drag on grain growth"

T. Chraska, A.H. King and C.C. Berndt, *Mater. Sci. Eng.* **A 286** (2000) 169-178: "On the size-dependent phase transformation in nanocrystalline zirconia"

K. Owusu-Boahen and A.H. King, *Scripta Materialia* **43** (2000) 175-179: "The properties of DSC lattices at coincident-site lattice-related triple junctions"

Rand Dannenberg and A.H. King, *J. Appl. Phys.* **88** (2000) 2623-2633: "Behavior of grain boundary resistivity in metals predicted by a two-dimensional model".

H. White, Y, Pu, M. Rafailovich, J. Sokolov, A.H. King, L.A. Giannuzzi, C. Urbanik-Shannon, B.W. Kempshall, A. Eisenberg, S.A. Schwarz, and Y.M. Strzhemeckny, *Polymer* **42** (2001) 1613-1619: "Focused ion beam/lift-out transmission electron microscopy cross sections of block copolymer films ordered on silicon substrates"

A. Brokman, A.H. King and Y. Vilenkin, *Acta Mater.* **49** (2001) 1-11: "The role of segregation in diffusion-induced grain boundary migration"

Kwame Owusu-Boahen and A.H. King, *Acta Mater.* **49** (2001) 237-247: "The early stages of yielding in polycrystalline gold thin films"

S. Rangarajan and A.H. King, *Thin Solid Films* **385** (2001) 22-28: "Nondestructive evaluation of delamination in ceramic thin films on metal substrates, by scanning electron microscopy"

T. Chraska and A.H. King, *Thin Solid Films* **397** (2001) 30-39: "TEM study of rapid solidification of plasma sprayed YSZ - part I. First splat solidification"

T. Chraska and A.H. King, *Thin Solid Films* **397** (2001) 40-48: "TEM study of rapid solidification of plasma sprayed YSZ - part II. Interfaces and subsequent splat solidification"

S.M. Schwarz, E.C.Houge, L.A. Giannuzzi and A.H. King, *J. Crystal Growth* **222** (2001) 392-398: "Bicrystal growth and characterization of copper twist grain boundaries"

T. Chraska and A.H. King, *Surface & Coatings Tech.* **157** (2002) 238-246: "Effect of different substrate conditions upon interface with plasma sprayed zirconia - a TEM study"

T.L. Brown, S. Swaminathan, S. Chandrasekar, W.D. Compton, A.H. King and K.P. Trumble, *J. Mater. Research* **17** (2002) 2484-2488: "Low-cost manufacturing process for nanostructured metals and alloys."

R. Kremer, R. Narayanan, S. Shekhar and A.H. King, *Journal of Materials Science* **40** (2005) 2795-2802: "On the design of controlled tricrystal specimens for the systematic study of static grain boundary triple junctions."

Z.Y. Ye, E.B. Slamovich and A.H. King, *Journal of Materials Research* **20** (2005) 558-562: "Size-driven domain reorientation in hydrothermally derived lead titanate nanoparticles."

S. Mallick, K.J. Bowman and A.H. King, *Applied Physics Letters* **86** (2005) Art. No. 182902: "Mechanism of structural transformation in bismuth titanate."

M.R. Shankar, A.H. King and S. Chandrasekar, *Journal of Applied Physics* **98** (2005) Art. No. 023502: Dislocation-indenter interaction in nanoindentation." (This paper is also linked as a publication in the August 1, 2005 issue of the *Virtual Journal of Nanoscale Science & Technology*.)

R.J. Kremer, M.A. Dayananda and A.H. King, *Zeitschrift fur Metallkunde* **96** (2005) 1187-1192: "Low temperature diffusion data measured from historical artifacts."

S. Swaminathan, M.R. Shankar, S. Lee, J. Hwang, A.H. King, R.F. Kezar, B.C. Rao, T.L. Brown, S. Chandrasekar, W.D. Compton and K.P. Trumble, *Mater. Sci. Eng. A* **410-411** (2005) 358-363: "Large strain deformation of single-phase solid solutions by plane strain machining."

M.R. Shankar, S. Chandrasekar, A.H. King and W.D. Compton, *Mater. Sci. Eng. A* **410-411** (2005) 364-368: "Effect of precipitates on the properties of aluminum 6061 deformed to large values of strain by machining."

M.R. Shankar, S. Chandrasekar, A.H. King and W.D. Compton, *Acta Materialia* **53** (2005) 4781-4793: "Microstructure and stability of nanocrystalline aluminum 6061 created by large-strain machining."

H. Chang, Samir M. Iqbal, E.A. Stach, A.H. King, N.J. Zaluzec and R. Bashir, *Applied Physics Letters* **88** (2006) 103109: "Fabrication and Characterization of Solid-State Nanopores using a Field Emission Scanning Electron Microscope." (This paper is also linked as a publication in the March 20, 2006 issue of the *Virtual Journal of Nanoscale Science & Technology*.)

W. Chang, A.H. King and K.J. Bowman, *Appl. Phys. Letts.* **88** (2006) 242901: "Thermal effects on domain orientation of tetragonal piezoleectrics studied by in-situ x-ray diffraction."

M.R. Shankar, B.C. Rao, S. Lee, S. Chadrasekhar, A.H. King and W.D. Compton, *Acta Mater.* **54** (2006) 3691-3700: "Severe plastic deformation of titanium at near-ambient temperature."

Wonyoung Chang, T.S. Key, A.H. King, E.B. Slamovich and K.J. Bowman, *Ferroelectrics* (in press) Proceedings of the 11th International Meeting on Ferroelectricity, Argentina, Brazil; September 5-9 (2005) "Electromechanical Cycling and Thermal Effects on Ferroelastic Domain Orientation."

S. Shekhar and A.H. King, *J. Mat. Sci.* **41** (2006) 7675-7682: "What does it mean to be special? The significance and application of the Brandon criterion."

S. Swaminathan, M.R. Shankar, B.C. Rao, W.D. Compton, S. Chandrasekhar, A.H. King and K.P. Trumble, *J. Mat. Sci.* **42** (2007) 1529-1541: "Severe plastic deformation (SPD) and nanostructured materials by machining."

M.R. Shankar and A.H. King, *Applied Physics Letters* **90** (2007) 141907: "How Surface Stresses Lead to Size Dependent Mechanics of Tensile Deformation in Nano-wires."

A.H. King, *Mater. Sci. Tech*, **23** (2007) 505-508: "Materials Perspective - Triple junction energy and the prospects for measuring it." (Invited Paper.)

M.R. Shankar, R. Verma, B. Rao, S. Chandrasekar, W.D. Compton, A.H. King, and K.P. Trumble, *Metallurgical and Materials Transactions A* (In press) "Severe Plastic Deformation of Difficult-To-Deform Materials at Near-Ambient Temperatures."

Hakkwan Kim and A.H. King, *Journal of Materials Research* **22** (2007) 2012-2016: "Control of porosity in fluoride thin films prepared by vapor deposition."

M. Taube, A.H. King and W.T. Chase, *Phase Transitions* (In press) "Transformation of ancient Chinese two-phase bronze surfaces to smooth adherent patinas."

W. Chang, A.H. King and K.J. Bowman, *Journal of Materials Research* (In press) "Thermal Effects on Mechanical Grinding-Induced Surface Texture in Tetragonal Piezoelectrics."

Refereed Conference Proceedings

A.H. King and D.A. Smith in *Dislocation Modelling of Physical Systems*, eds. Ashby, Bullough, Hartley & Hirth, "Grain Boundary Dislocations and the Topography of Grain Boundary Planes" (Pergamon Press, Oxford, 1981) p.544.

A.H. King in *Surface Engineering - Proceedings of a NATO Advanced Study Institute*, Eds. R. Kossowsky & S. Singhal: "Diffusion Induced Grain Boundary Migration in Surface Modification Processes". (Martinus Nijhoff Publishers, Amsterdam, 1984)

A.H. King and M.H. Yoo in *High Temperature Ordered Intermetallic Alloys II* Eds. Stoloff, Koch, Liu & Izumi, MRS Symposium Series **81** (1986) 99-104: "Dislocation reactions at grain boundaries in $L1_2$ ordered alloys"

D. Goyal, A.H. King and J.C. Bilello in *Electronic packaging materials science III*, Eds. R. Jaccodine, K.A.Jackson and R.C. Sundahl, MRS Symposium Series **108** (1988) 395-400 "Microstructure development in thin films during deposition from the vapor phase"

D. Goyal, W. Ng, A.H. King and J.C. Bilello in *Electronic packaging materials science III*, Eds. R. Jaccodine, K.A. Jackson and R.C. Sundahl, MRS Symposium Series **108** (1988) "Identification of the failure mechanism of a thin film on a thick substrate by means of synchrotron x-ray topography combined with transmission electron microscopy"

D. Goyal and A.H. King in *Adhesion in Solids*, Eds. D.M. Mattox, J.E.E. Baglin, R.J. Gottschall and C.D. Batich, MRS Symposium Proceedings, **119** (1988) 291-296: "Electron microscope observations of mechanisms of thin film delamination from substrates"

Kisoo Shin and A.H. King in *Interfacial Structure, Properties and Design*, Eds. M.H. Yoo, W.A.T. Clark and C.L. Briant, MRS Symposium Series **122** (1988) 121-126: "On the applicability of continuity of structure ideas to grain boundaries in HCP metals"

Re-Jehn Jahn and A.H. King in *Interfacial Structure, Properties and Design*, Eds. M.H. Yoo, W.A.T. Clark and C.L. Briant, MRS Symposium Series **122** (1988) 213-219: "Transmission electron microscope observations of lattice defects produced during diffusion induced grain boundary migration"

A.H. King and M.H. Yoo in *Interfacial Structure, Properties and Design*, Eds. M.H. Yoo, W.A.T. Clark and C.L. Briant, MRS Symposium Series **122** (1988) 305-311: "Interaction of slip with a grain boundary in the $L1_2$ ordered structure - a $\Sigma 9$ tilt boundary"

Fu-Rong Chen and A.H. King, *J. de Physique* **49** (1988) C5-195: "Grain boundary structure in hcp metals"

Fu-Sen Chen, Re-Jehn Jahn and A.H. King, *J. de Physique* **49** (1988) C5-617: "Dependence of diffusion induced grain boundary migration on grain boundary structure"

Fu-Sen Chen, Girish Dixit and Antonio J. Aldykiewicz, Jr. and A.H. King in *DIMETA-88, Proceedings of an International Conference on Diffusion in Metals and Alloys held in Balatonfured, Hungary*, (Trans Tech., Aedermannsdorf, 1988) "Bicrystal studies of diffusion induced grain boundary migration in Cu/Zn"

Kisoo Shin and A.H. King, *Journal de Physique* **51** (1990) C1-203: "Grain boundary structural transformations in hexagonal close packed metals"

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AIME Fall Meeting, 1982: "Mechanisms of Grain Boundary Migration and Point Defect Source/Sink Action" (invited presentation).

AIME Fall Meeting, 1983: "Interactions of Lattice Partial Dislocations with Grain Boundaries in FCC Materials" (with Fu-Rong Chen).

Materials Research Society Annual Meeting, 1983: Application of Computer Simulation Techniques to Problems in Conventional Plasma Spraying Processes" (with J.W. Perram).

AIME Fall Meeting, 1984: "Geometrical and Energetic Aspects of the Interactions of Partial Lattice Dislocations with Grain Boundaries" (invited presentation).

AIME Annual Meeting, 1986: "Comparative Studies of Diffusion Induced Grain Boundary Migration in the Copper-Zinc System" (invited presentation).

AIME Annual Meeting, 1986: "Instability of Planar Low Angle Grain Boundaries".

AIME Annual Meeting, 1987: "The misorientation dependence of diffusion induced grain boundary migration" (with Fu-Sen Chen).

AIME Annual Meeting, 1987: "Structures of high angle grain boundaries in zinc" (with Fu-Rong Chen).

APS Spring Meeting, 1987: "Identification of the failure mode of a compressively loaded thin film on a thick substrate by means of synchrotron x-ray topography combined with transmission electron microscopy" (with W. Ng, D. Goyal and J.C. Bilello).

AIME Fall Meeting, 1988: "Relationships between diffusion induced grain boundary migration and grain boundary structure".

AIME Annual Meeting, 1989: "Diffusion Induced Grain Boundary Migration" (invited presentation).

AIME Annual Meeting, 1989: "In-Situ observations of intergranular fracture in molybdenum" (invited presentation, with Hong Zhang).

AIME Fall Meeting, 1989: "TEM observations of the mechanism of thin film delamination from substrates" (with Deepak Goyal).

National Center for Electron Microscopy Workshop on the Characterization of Crystalline Interfaces by Advanced Electron Microscopy, August 1990: "Crystallography of Interfaces" (invited keynote address)

AIME Fall Meeting, 1991: "Confirmation of a Grain Boundary Kirkendall Effect in Cu/Zn" (invited presentation; Kirkendall Symposium).

Workshop on Grain Boundaries in High-Tc Superconductors, Univ. of Wisconsin, 1992: "Principles of Grain Boundary Geometry for Oxide Superconductors" (invited address).

MRS Fall Meeting, 1992: "What is the mechanism of grain boundary selection during grain growth?"

MRS Fall Meeting, 1992: "Grain growth and boundary selection in bulk processed $YBa_2Cu_3O_{7-\delta}$" (with Jenn-Yue Wang, Yimei Zhu and Masaki Suenaga).

TMS Annual Meeting, 1997: "Making links between grain boundary character distribution and polycrystalline properties" (invited address).

MRS Fall Meeting, 1997: "Observations of single splats of zirconia on various substrates" (with T. Chraska and J. Birs).

APS March Meeting, 1998: "Growth, transformation and agglomeration of nanocrystalline zirconia particles produced by plasma spraying of liquid feedstocks" (with T. Chraska and C.C. Berndt)

APS March Meeting, 1998: "Nucleation of dislocations in highly-textured polycrystalline gold thin films" (with K. Owusu-Boahen).

ACerS Annual Meeting, 1998: "Grain boundaries and grain boundary networks in polycrystalline materials" (invited address).

IUMRS/ICEM '98: "Nanoscale Interactions between Crystal Interfaces" (invited address).

ASM Fall Meeting, 1998: "Transmission Electron Microscopy and the Art of Knowing What You Are Looking At".

TMS Fall Meeting, 1998, Symposium on Emerging Paradigms in Microstructural Evolution, a Symposium in Honor of John W. Cahn's 70th Birthday: "Triple Junctions in Anisotropic Materials."

National Educators' Workshop, 1998: "Internet Research and the Undergraduate Experience" (with C.C. Berndt, J. Quinn and G. Halada).

IUMRS/ICAM '99: "Microstructures of plasma-sprayed zirconia revealed by transmission electron microscopy" (invited presentation, with T. Chraska).

IUMRS/ICAM '99: "A transmission electron microscope study of the origin of lattice dislocations in polycrystalline gold thin films" (with K. Owusu-Boahen).

IUMRS/ICAM '99: "The role of teaching in doctoral education" (invited workshop presentation).

ACerS Annual Meeting, 2000: "Flattening the curve: some advanced phenomena that retard grain growth" (invited presentation).

MRS Fall Meeting, 2000: "The influence of grain junction defects on grain growth" (invited presentation).

RWTH Workshop on Controversial Issues of Interface Dynamics, Vaalsbroek, Netherlands, April 2001: "The influence of triple junctions on grain growth"

MRS-Brazil Inaugural Meeting, Rio de Janeiro, July 2002, ***opening plenary address*** "Interfaces in Nano-Scaled Structures."

Max-Planck Institut Workshop on Structure and Composition of Interfaces, Kloster Irsee, Germany, August 2002: "Measuring Triple Junction Properties."

National Academies Workshop on National Laboratory-University Collaborations, Berkeley, CA, July 2003: "Collaboration as a Means of Assuring a Sustainable Human Resource Base."

ACerS Annual Meeting, 2004: "Lies, Damned Lies, and Image Analysis" (invited presentation).

Fourth SIAM Conference on Mathematical Aspects of Material Sciences, 2004: "Can Triple Junction Energy Contribute to the Driving Force for Grain Growth?" (invited presentation).

46th Electronic Materials Conference, Notre Dame University, South Bend, Indiana, June 23-25, 2004: "Fabrication of a Solid-State Single Nanopore for DNA Characterization" (H. Chang, F. Kosari, G. Andreadakis, G. Vasmatzis, E. Basgall, A. H. King, and R. Bashir.)

European Workshop on Piezoelectrics, Montpelier, France, July 21-23, 2004 "Preferred Orientation and Directional Properties in Piezoelectric Materials" (J. Jones, E. Slamovich, A.H. King and K.J. Bowman: invited presentation.)

MRS Fall Meeting, 2005: "Growth and Stability of Grain Boundary Triple Junctions in Copper" (Shashank Shekhar and Alex King.)

MRS Fall Meeting, 2005: "Observation of Enhanced Diffusion at Triple Junctions in Copper" (Raghavan Narayanan, Mysore A Dayananda and Alex King.)

TMS Annual Meeting, 2006 (Brandon Symposium): "What does it mean to be Special?" A.H. King and S. Shekhar (Invited Presentation).

TMS Annual Meeting, 2006 (Symposium on Ultrafine-Grained Materials): "Microstructure Evolution of Pure Copper by Large Strain Machining" A.H. King, S. Chandrasekar, W.D. Compton, K.P. Trumble, T.L. Brown and L.F. Allard, Jr (Invited Presentation).

TMS Annual Meeting, 2006 (Dayananda Symposium): "Rapid Diffusion in Grain Boundary Triple Junctions" A.H. King M.A. Dayananda, R. Narayanan and S. Shekhar.

National Science Foundation Discovery Corps Conference, Washington DC, April 2006: "Opportunities for Science to Influence Diplomacy" (Keynote Address).

MRS Fall Meeting, 2006: "What is the Nature of Triple Junction Energy?" (Invited Talk).

TMS Annual Meeting, 2007: "Anomalous Diffusion along Interfaces in Crystalline Solids" N.S. Raghavan and A.H. King

TMS Annual Meeting, 2007: "Diffusion of Mn into Grain Boundaries and Triple Junctions in LiF Thin Films" Hakkwan Kim and A.H. King

TMS Annual Meeting, 2007 (Koch Symposium): "Plane-strain machining for studying severe plastic deformation in metals and alloys" K.P. Trumble, S. Swaminathan, M. R. Shankar, S. Chandrasekar, W. D. Compton and A.H. King.

Plasticity 2007: "High-Strain Microstructures Produced by Machining and Implications for Nanostructured Alloy Design" A.H. King, M. Ravi Shankar, T. L. Brown, W. Moscoso, J. B. Mann, S. Chandrasekar and W. Dale Compton

Intergranular and Interphase Boundaries 2007: "Triple Junction Property Assessments" S. Shekhar, H. Kim, R. Narayanan and A.H. King.

Intergranular and Interphase Boundaries 2007: "Two dimensional solutions to fractional order diffusion equations under instantaneous and constant source conditions" N.S. Raghavan and A.H. King.

Colloquia:

Massachusetts Institute of Technology, February 1981.

Columbia University, April 1981.

Polytechnic Institute of New York, November 1984.

Surrey University, England, May 1985.

Oxford University, England, May 1985.
Sheffield University, England, June 1985.
Dartmouth College, October 1985.
Oak Ridge National Laboratory, August 1986.
SUNY, Stony Brook, November 1986.
California State University, Fullerton, February 1987.
IBM Thomas J. Watson Research Center, November 1987.
National Bureau of Standards, October 1988.
University of Arizona, February 1990.
International Centre for Theoretical Physics, Trieste, Italy, August 1990
Stevens Institute of Technology, March 1993
Northwestern University, April 1993
National Tsing Hua University, Taiwan, October 1993
National Tsing Hua University, Materials Science Ctr., Taiwan, October 1993
ITRI, Hsinchu, Taiwan, October 1993
University of Michigan, April 1994
Hebrew University, Jerusalem, July 1994
Texas Instruments, Dallas, January 1995
SGS Thomson Microelectronics, Dallas, January 1995
National Tsing Hua University, Materials Science Ctr., Taiwan, June 1995
Columbia University, November 1995
Tohoku University, Japan, June 1996
Kyushu University, Japan, July 1996
Sandia National Laboratory (CA), March 1997
Purdue University, November 1997.
Institute for Plasma Physics, Czech Academy of Science, Prague, July 1998.
Korea Advanced Institute of Science & Technology, August 1998.
Sandia National Laboratory (NM), July 2000.
Case Western Reserve University, November 2000.
Harvard University, March 2001.
Rensselaer Polytechnic Institute, February 2002.
Lawrence Livermore Nat'l Lab. – ***Frontiers of Materials Science Lecture***, April 2002.
Alfred University, October 2002.
Washington DC Chapter of ASM International – ***Burgess Memorial Lecture***, March 2003.
ASM Federal Affairs Committee, March 2003.
University of Michigan, March 2003.
University of Nevada at Reno, April 2003.
Pennsylvania State University – ***Distinguished Lecture Series***, April 2005.

National Inst. of Standards & Technology, December 2005.

Washington DC Chapter of ASM International, February 2006.

Carnegie-Mellon University, November 2006.

University of Minnesota, April 2007.

Iowa State University – ***Distinguished Lecture Series***, April 2007

Ohio State University, May 2007

Professional Service:

Member of MSD "Surfaces and Interfaces" committee of ASM.

Member of "Thin Films and Interfaces" committee of TMS-AIME.

Member of Board of Review of Metallurgical Transactions.

Chairman of "Interfaces" session at AIME Annual Meeting, 1983.

Member of Organizing Committee and Session Chairman for Symposium on "Interface Mobility and Microstructural Control" sponsored by ASM, Detroit, September, 1984.

Chairman of "Surfaces and Interfaces" session at EMSA Annual Meeting, 1984.

Chairman of "Phase Transformations" session at AIME Annual Meeting, 1985.

Chairman of "Surfaces and Interfaces" session at EMSA Annual Meeting, 1985.

Chairman of "Ordered Intermetallic Alloys" session at AIME Annual Meeting, 1987.

Chairman of "Interfacial Science and Engineering" session at MRS Spring Meeting, 1988.

Chairman of "Advanced Materials for Electronic Packaging" symposium session at AIME Annual Meeting, 1990.

Co-Editor of Special Issue of Journal of Electronic Materials, August 1990.

Member of Organizing Committee for Symposium on "Structure-Property Relationships of Interfaces"at ASM Materials Week, 1990.

Chairman of "Surfaces and Interfaces" session at EMSA Annual Meeting, 1992.

Session Chair for "Interfaces II" symposium in Ballarat, Australia, Nov. 1993.

Member of Organizing Committee and session chair for Symposium on "Defect-interface interactions"sponsored by MRS, Boston, Fall 1993.

Session Chair for Symposium on "Mechanisms of thin film evolution" sponsored by MRS, Boston, Fall1993.

Session Chair for Symposium on "Polycrystalline thin films, texture, microstructure and properties" sponsored by MRS, San Francisco, Spring 1994.

Print and Electronic Media Review Editor for Materials Science & Engineering A, 1995-2003

Session Chair for "International Conference on Grain Growth, II", Kitakyushu, Japan, May 1995.

Member of Advisory Board for the Japan-France Joint Seminar on the Meso- Micro and Nanoscopic Analyses of Materials Interfaces, Nagoya, Japan, July 1996.

MRS Program Committee Member, 1995 - 1998.

MRS Meetings Quality Subcommittee Member, 1995 -

Meeting Chair, MRS Spring Meeting, 1997.

Member of the Organizing Committee for the David A. Smith Memorial Symposium, ASM Fall Meeting, 1997.

MRS Councillor, 1998 - 2000.

MRS External Affairs Committee Member, 1998 - 2001

MRS International Relations Subcommittee Chair, 1998 - 2001

IUMRS Education Commission member, 1998 - 2001

MRS Executive Committee member, 1999-2003.

Session Chair for Symposium on "Surface Engineering" at IUMRS/ICAM '99.

MRS President, 2002.

Federation of Materials Societies Executive Committee, 2003-.

University Materials Council Executive Committee, 2003-.

Member of Steering Committee for NSF Workshop on Grand Challenges in Nanomaterials, April 2003.

Member of the International Advisory Committee, Int. W'shop on Interfaces in Advanced Materials, Chernogolovka, Russia, May 2003.

Member of the International Science Committee, Second Int. Conf. on Surface and Interface Science & Engineering, Guanzhou, China, May 2003.

Member of the International Advisory Committee, IUMRS/ICAM, Yokohama, Japan, October 2003.

Member of the Laboratory Director's Review Committee for the Division of Chemistry and Materials Science, Lawrence Livermore National Lab., 2003 - .

Symposium Organizer for the Fourth SIAM Conference on Mathematical Aspects of Material Sciences, 2004.

Symposium Organizer for the Pacific Rim Conference on Advanced Materials, Beijing, Nov. 2004.

Gordon Conference on Physical Metallurgy, 2006, Co-Chair.

Chair, University Materials Council, 2006-07.

Member of the Materials Science & Technology Council External Advisory Board, Sandia National Lab., 2006 - .

Member of the International Advisory Committee for the 17th IKETANI International Symposium on "Dreams, Creation and Realization of Materials Saving the Humankind" (in honor of the 80th birthday of Prof. Masao Doyama.) Tokyo, Japan, Sept. 5-7, 1997.

Member of the Scientific Review Committee for the National Center for Electron Microscopy, Lawrence Berkeley National Laboratory, 2007-.

Member of the International Organizing Committee for the 2007 Joint International Conference of The 3rd International Conference on Surface and Interface Science and Engineering (SISE 2007) and the Symposium on Surface Engineering for Industrial Applications (SEIA 2007), Singapore, December 12 - 14, 2007.